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(54) Improvements relating to bin liners

(57) The invention provides a pack of pre-formed plastic bin-liner bags and a method of lining a bin with a pre-formed plastic bin-liner bag. The pack comprises a storage holder 15 which contains a train of bags 2 in interleaved or end-to-end connected relationship, the train of bags being preferably zig-zag folded in a stack 9 within the pack. A cover portion 16a of the storage holder 15 includes a slit 17 through which the train of bags can be withdrawn bag by bag. The method of the invention provides that the pack is located in the interior of the bin and the open end of the first bag of the train is guided into engagement with a rim of the bin to line the bin for use.

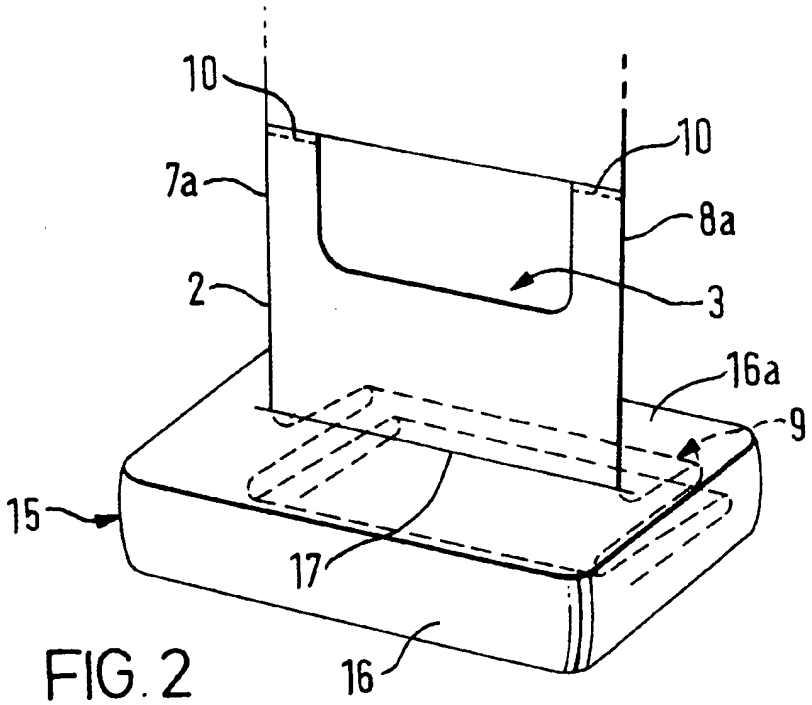

FIG. 2

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Description

The present invention relates to bin liners, more particularly plastic bag liners for use with domestic, hospital or commercial refuse bins (e.g. kitchen bins).

Plastic bag liners for refuse bins are conventionally sold in rolls as a train of bags connected together by tearable regions (e.g. lines) of weakness across the whole roll, each bag being detached from the roll by tearing immediately before use. The arrangement, and storage in a cupboard, is inconvenient and can be time-consuming, particularly for the elderly and infirm.

The present invention aims to at least partially overcome the above disadvantages and provide an improved or at least alternative bin liner system.

According to one aspect of the present invention, therefore, there is provided a pack of pre-formed plastic bags, each having a generally closed end and a generally open end and being adapted for use as bin liners, the pack comprising:

a train of said bags arranged in interleaved relationship whereby removal of one bag from the pack causes an adjacent bag to become partially removed from the pack, or arranged in end-to-end relationship with adjacent bags connected together in the train via regions (e.g. lines) of weakness; the train of bags being packed for storage in:

a storage holder containing the packed train of bags, the holder comprising a container having a cover portion partially closing the container over the packed train of bags;

the cover portion including an aperture having a cross-section smaller than the corresponding dimension of the packed train of bags but large enough to permit the train to be withdrawn from the holder bag by bag through the aperture of the cover portion.

Each bag preferably has a closed end and an open end. Preferably, two handle portions extend from a rim of the open end. The bags lie flat in the packed train of bags and in this configuration the handle portions are a pair of flattened handle-providing projections extending one at each side of the bag. These projections are known as "ears" and are knotted together prior to uplifting.

The lines of weakness, when present, typically separate the end of each handle-providing projection from the closed end of the adjacent bag of the train. The train of bags is suitably manufactured in conventional manner, by firstly obtaining a cylindrical plastic film by blown-film extrusion through an annular die in conventional manner, then closing the cylinder by heat bonding to form a first and second seam across the cylinder and spaced closely apart longitudinally. A cutter then cuts out a central portion of the cylinder so as to leave the handle-providing projections at an open end of a bag, the projections connected at their ends via a web of plastic between the two seams to the closed end of the adjacent bag of the train. The cutter is provided with blades which simultaneously perforate the web portion between the two seams - and therefore also between the handle portions and the closed end of the adjacent bag - to form the regions of weakness between the two bags. The packed train of bags may conveniently be in the form of a zig-zag folded stack.

Alternatively, the bags can be not connected to one another, but interleaved in the zig-zag folded stack so that removal of one bag from the pack causes an adjacent bag to become partially removed from the pack. The end of the said adjacent bag thus extends out of the pack, where it can be grasped for removal, and so on.

The container may conveniently be in the form of an envelope, formed for example from a plastic material of somewhat thicker gauge than the plastic material of the bags. The cover portion of the envelope may be provided with a slit to constitute the said aperture.

The aperture may conveniently be closed by breakable cross-webs, e.g. of plastic, prior to use, to prevent accidental removal of bags. When the pack is first used, the aperture would be opened by breaking the cross-webs, and the first (leading) bag of the train would be withdrawn from the holder for use.

The pack is most preferably located for use in the bin itself, resting at the bottom of the bin. The train of bags is most preferably formed from bags oriented each the same way as its neighbour so that one end of the train is an open bag end and the other end of the train is a closed bag end, and is most preferably packed such that the bags are withdrawn from the holder open end first. In this way, the leading bag of the train can be pulled up and out of the holder, and then its rim folded over a rim of the bin for use.

When the leading bag of the train is full of refuse, it is simply lifted out of the bin via the handle portions. Where the bags are connected together via regions of weakness, this causes the bag to pull a fresh bag from the holder. When the leading bag is clear of the rim of the bin, the rim of the bin can be used as an edge against which the regions of weakness connecting that bag with the handle portions of the fresh bag can be broken by tearing, and the fresh bag is then readily located in place by folding its rim over the rim of the bin, and so on.

Where the bags are interleaved together, a similar effect is obtained except that the bags are separate, so that lifting one full bag out of the bin does not remove the next bag, which must therefore itself be pulled from the pack before being located in place by folding its rim over the rim of the bin.

The pack can be fixed to the base of the interior of the bin, or can simply rest there under its own weight.

The use of a train of pre-formed plastic bags provided in the base of a bin in the manner referred to above for use as bin liners - with or without the use of a pack as described above - is itself novel and constitutes a

second aspect of the present invention.

According to a second aspect of the present invention, therefore, there is provided a method of lining a bin with a pre-formed plastic bag having a generally closed end and a generally open end and adapted for use as a bin liner, the method comprising:

providing a train of said bags arranged in interleaved relationship within a storage pack whereby removal of one bag from the pack causes an adjacent bag to become partially removed from the pack, or arranged in end-to-end relationship with adjacent bags connected together in the train via regions (e.g. lines) of weakness; the bags oriented each the same way as its neighbour such that one end of the train is an open bag end and the other end of the train is a closed bag end;
locating the said packed train of bags in the interior of the bin; and
guiding the open end of the leading bag of the open bag end of the train into engagement with a rim of the bin whereby the leading bag of the train lines the bin for use.

The above method is most preferably carried out using the pack according to the first aspect of the present invention.

The bags are suitably constructed of conventional plastic, which may be of any suitable gauge or thickness and may be white and/or coloured (e.g. red, blue, green or any combination thereof) and/or may be printed with designs etc in conventional manner. The manufacturing process will desirably be automated as far as possible; the train-forming method is conventional, and the preferred zig-zag folded stacking step can readily be accomplished using a swing-arm folding apparatus; the surrounding envelope (storage holder) can be formed in conventional manner and may be sealed in conventional manner (e.g. by adhesive and/or heat bonding) after the packed train of bags has been placed inside it.

All plastic parts are preferably biodegradable.

For a better understanding of the invention, and to show how the same may be carried into effect, an embodiment will now be described, without limitation and purely by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a partially perspective, partially schematic view of a train of pre-formed plastic bags for use as bin liners;

Figure 2 shows a pack containing the train of Figure 1; and

Figure 3 shows vertical cross-sectional view through a bin, lines using a method of lining a bin with the pack of Figure 2.

Referring to the Figures, in which like parts are designated alike, a train 1 of pre-formed plastic bags 2 is formed in conventional manner from bags arranged in end-to-end relationship and all oriented the same way so that one end 3 of the train is an open bag end and the other end 4 of the train is a closed bag end. The bags 2 are adapted for use as liners for a domestic refuse bin 5.

Each bag 2 has a rim 6 at its open end, from which rim extends two handle portions 7,8. The train is packed for storage in the form of a zig-zag folded stack 9 and in this configuration the handle portions 7,8 are a pair of flattened projections 7a,8a extending one at each side of the bag 2.

Adjacent bags of the train are connected together via lines of weakness 10, which can be broken by manual force to release the leading bag from the train 1 when desired. The lines of weakness 10 are provided in conventional manner in a web 14 of plastic left between a pair of closely spaced seams 11,12 formed by heat bonding during the manufacturing process. Seam 11 defines the closed end of one bag while seam 12 defines the end of the handle-providing projections 7a,8a of the next bag of the train and forms the central part of each handle portion 7,8 when that bag is in use. It is preferred that the bags are folded in, gusset-like, at the sides by about double the width of the handle-providing projections 7a,8a, and provided with a conventional crease 13, thus giving a double thickness of plastic for each handle portion 7,8 and leading to generally neater packing of the bags. The in-folded portions are locked by seams 11 and 12. The handle-providing projections 7a,8a and the lines of weakness 10 are formed in conventional manner by a cutter which cuts out a central hole in the semifinished train between the handle-providing projections 7a,8a and simultaneously perforates the web 14 between the seams 11,12 to form the lines of weakness 10.

The folded stack 9 of bags is contained in a storage holder 15 to form a pack according to the invention (see Figure 2). The stack is oriented such that the bags are withdrawn from the holder open end 3 first. The holder comprises a plastic envelope or container 16 having a cover portion 16a partially closing the container 16 over the packed train of bags. The cover portion 16a has a slit-like aperture 17 of a cross-section smaller than the lateral dimension of the packed stack of bags but long enough to permit the train 1 of bags to be withdrawn from the holder bag by bag through the aperture 17, as shown in Figure 2.

As shown particularly in Figure 3, the train of bags - housed in the container 16 in the embodiment shown - is first located in the interior of the bin 5 and the open end of the leading bag of the train then guided into engagement with a rim 5a of the bin, to line the bin ready for use. When the leading bag (liner) is full of refuse 18, it is simply lifted out of the bin via the handle portions 7,8, so pulling a fresh bag from the holder 15. When the

leading bag is clear of the rim of the bin, the rim of the bin can be used as an edge against which the lines of weakness connecting that bag with the handle-providing projections 7a,8a of a fresh bag can be broken by tearing, and the fresh bag is then guided into engagement with the rim of the bin as before.

The above description broadly describes the invention without limitation to the particular embodiment illustrated. Variations and modifications, as will be readily apparent to one of ordinary skill in the art, are intended to be included within the scope of this patent.

Claims

1. A pack of pre-formed plastic bags, each having a generally closed end and a generally open end and being adapted for use as bin liners, the pack comprising:

   a train of said bags arranged in interleaved relationship whereby removal of one bag from the pack causes an adjacent bag to become partially removed from the pack, or arranged in end-to-end relationship with adjacent bags connected together in the train via regions of weakness; the train of bags being packed for storage in:
   a storage holder containing the packed train of bags, the holder comprising a container having a cover portion partially closing the container over the packed train of bags;
   the cover portion including an aperture having a cross-section smaller than the corresponding dimension of the packed train of bags but large enough to permit the train to be withdrawn from the holder bag by bag through the aperture of the cover portion.

2. A pack according to claim 1, wherein the regions of weakness are lines of weakness.

3. A pack according to claim 1 or 2, wherein the packed train of bags is in the form of a zig-zag folded stack.

4. A pack according to any one of the preceding claims, wherein the container comprises an envelope of a plastic material.

5. A pack according to any one of the preceding claims, wherein the aperture of the cover portion of the container comprises a slit.

6. A pack according to any one of the preceding claims, wherein the train of bags is formed from bags oriented each the same way as its neighbour.

7. A method of lining a bin with a pre-formed plastic bag having a generally closed end and a generally open end and adapted for use as a bin liner, the method comprising:

   providing a train of said bags arranged in interleaved relationship within a storage pack whereby removal of one bag from the pack causes an adjacent bag to become partially removed from the pack, or arranged in end-to-end relationship with adjacent bags connected together in the train via regions of weakness; the bags oriented each the same way as its neighbour such that one end of the train is an open bag end and the other end of the train is a closed bag end;
   locating the said packed train of bags in the interior of the bin; and
   guiding the open end of the leading bag of the open bag end of the train into engagement with a rim of the bin whereby the leading bag of the train lines the bin for use.

8. A method according to claim 7, wherein the pack is a pack according to claim 6.

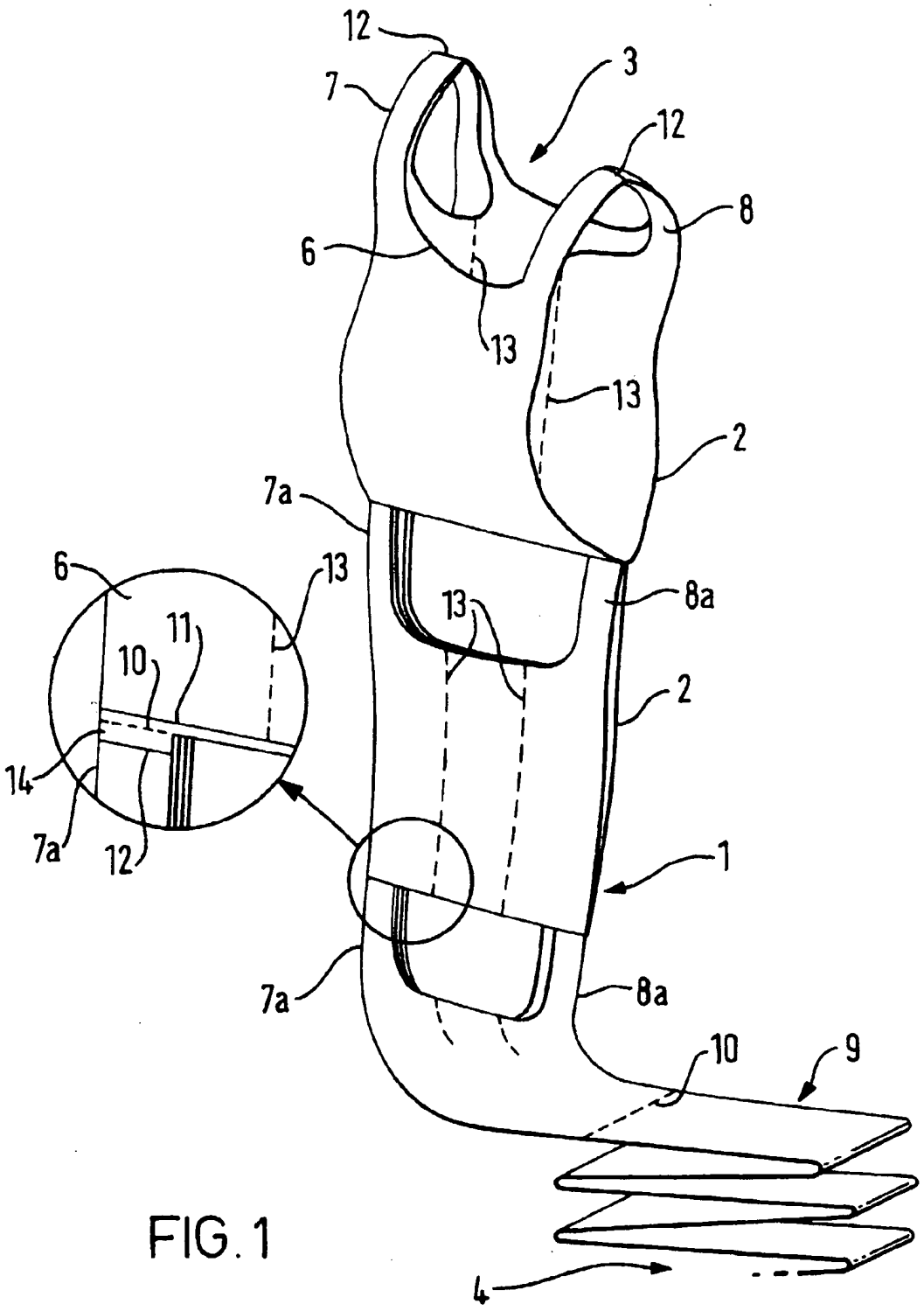

FIG. 1

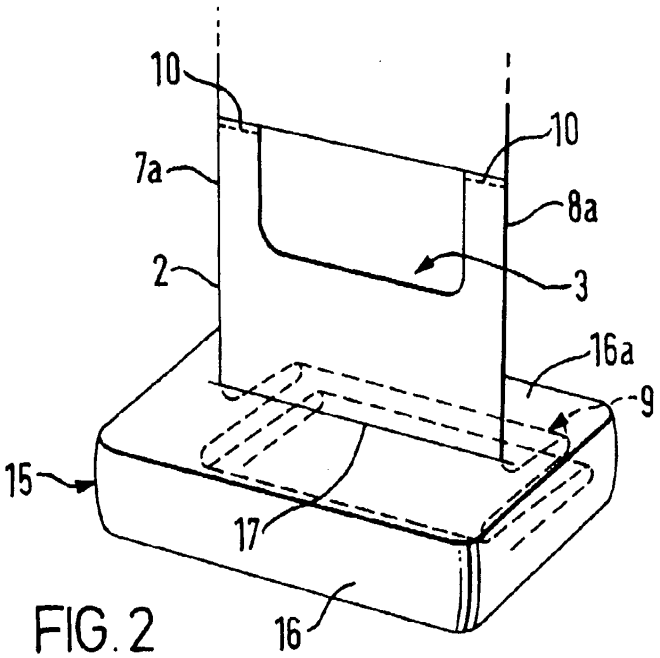

FIG. 2

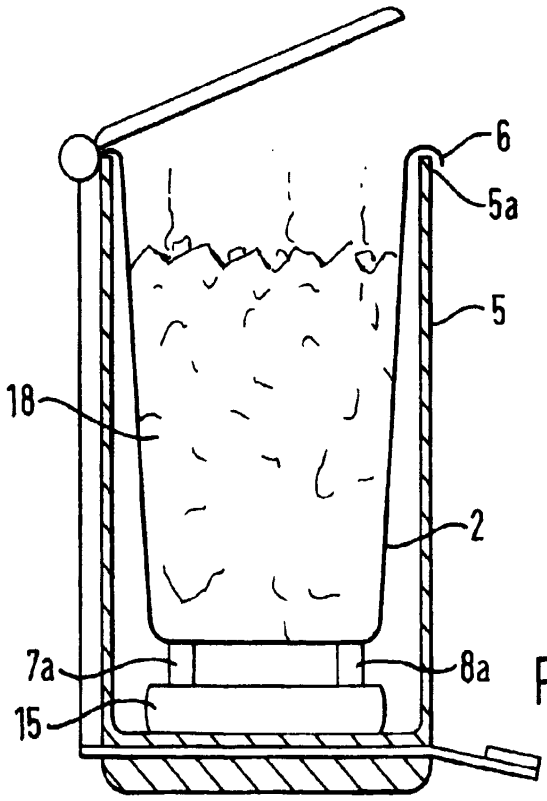

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 98 30 2047

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 5 353 950 A (TAYLOR) 11 October 1994 * the whole document *	1-8	B65F1/06
X	US 5 000 340 A (LEGGIO) 19 March 1991 * column 3, line 39 - column 4, line 15 * * column 4, line 54 - column 5, line 35; figures 1-5 *	1-8	
X	DE 43 31 041 A (FOLAG) 16 March 1995 * column 1, line 49 - column 2, line 59 * * column 3, line 5 - line 65; figures 1,5 *	1-8	
X	GB 2 074 531 A (CHIANG KEH-YEU) 4 November 1981 * the whole document *	1-8	
X	CA 888 013 A (GOURLEY) 14 December 1971 * the whole document *	1-8	
X	DE 24 24 633 A (PANTHÖFER) 4 December 1975 * page 3, line 1 - line 16; figures 1-4 *	1-8	TECHNICAL FIELDS SEARCHED (Int.Cl.5) B65F
X	US 3 392 825 A (GALE) 16 July 1968 * the whole document *	1-8	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 June 1998	Martens, L

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